

AMENDMENTS TO THE CLAIMS:

Please cancel claim 53, and amend claims 62, 65, 82 and 126-129 as follows. The changes in these claims from their immediate prior version are shown with strikethrough or [[double brackets]] for deleted matter and underlines for added matter. A complete listing of the claims with proper claim identifiers follows.

Listing of Claims

1. (Canceled)
2. (Previously presented) The needlefree access device of claim 82 wherein the device is suitable for transferring medical fluids.
- 3-4. (Canceled)
5. (Previously presented) The needlefree access device of claim 93 wherein the device is suitable for handling medical fluids.
- 6-13. (Canceled)
14. (Previously presented) The needlefree access device of claim 93 wherein the inlet channel comprises a female luer taper.
15. (Previously presented) The needlefree access device of claim 93 wherein the piston section in its closed position seals the inlet channel against airborne bacteria.
16. (Previously presented) The needlefree access device of claim 97 wherein the connected outlet section, biasing section and piston section comprise thermoplastic material and resilient material.
17. (Previously presented) The needlefree access device of claim 16 wherein the resilient material is overmolded onto the thermoplastic material.

18. (Previously presented) The needlefree access device of claim 93 wherein the piston section in its closed position is either flush with or extends out of the housing inlet.

19. (Canceled)

20. (Previously presented) The needlefree access device of claim 86 wherein the resilient material has a Shore A durometer of between about 30 and 90.

21. (Previously presented) The needlefree access device of claim 93 wherein the biasing section has a solid central section.

22. (Previously presented) The needlefree access device of claim 16 wherein the resilient material is a resilient thermosetting material.

23. (Previously presented) The needlefree access device of claim 93 wherein the biasing section is generally hollow.

24. (Canceled)

25. (Previously presented) The needlefree access device of claim 93 wherein the helical flow channel has a cross-sectional width of about 0.02 inches when the piston section is in its open position

26. (Previously presented) The needlefree access device of claim 93 wherein the helical flow channel has a cross-sectional width of about 0.04 inches when the piston section is in its open position.

27. (Previously presented) The needlefree access device of claim 93 wherein the piston section comprises a normally elliptical top portion with a wedge shaped opening therein.

28. (Previously presented) The needlefree access device of claim 27 wherein the housing inlet is round and the biasing and piston member is

deformable such that when the piston section is in its closed position, the top portion is forced into a round shape and the wedge shaped opening is closed.

29. (Previously presented) The needlefree access device of claim 28 wherein the piston section further comprises a radial flow channel beneath the wedge shaped opening.

30. (Previously presented) The needlefree access device of claim 93 wherein the housing comprises a generally smooth cylindrical wall surrounding the biasing section.

31. (Previously presented) The needlefree access device of claim 30 wherein the housing further comprises an internal threaded section adjacent the connection between the biasing section and the outlet section.

32-33. (Canceled)

34. (Previously presented) The needlefree access device of claim 93 wherein the resilient body of the biasing section is made with a material that has a Shore A durometer of between about 50 and about 80.

35. (Previously presented) The needlefree access device of claim 93 where in the piston section includes a wiper seal.

36. (Previously presented) The needlefree access device of claim 93 wherein the piston section and biasing section are formed as one monolithic piece.

37. (Previously presented) The needlefree access device of claim 36 wherein the monolithic piece is overmolded onto a section of the housing forming the outlet to provide a combination outlet, biasing and piston member.

38-40. (Canceled)

41. (Previously presented) The needlefree access device of claim 82 wherein the piston section is made from a resilient material.

42. (Canceled)

43. (Previously presented) The needlefree access device of claim 93 wherein the biasing section provides a force of between about 0.2 lbs and about 3.5 lbs.

44-47. (Canceled)

48. (Previously presented) The needlefree access device of claim 22 wherein the thermosetting material comprises silicone.

49. (Previously presented) The needlefree access device of claim 16 wherein the resilient material comprises thermoplastic elastomer.

50-53. (Canceled)

54. (Previously presented) The needlefree access device of claim 93 wherein the piston section comprises a normally elliptical top portion with a V-shaped opening across a minor axis of the ellipse.

55-61. (Canceled)

62. (Currently amended) The needlefree access device of claim 35 wherein the wiper seal can withstand a pressure of at least 2 psi.

63. (Previously presented) The needlefree access device of claim 93 wherein the piston section has a top surface that extends above the inlet.

64. (Previously presented) The needlefree access device of claim 63 wherein the top surface of the piston section is slanted and extends above the inlet on only one side of the access device.

65. (Currently amended) The needlefree access device of claim 82 wherein the ~~valve member includes a piston member containing~~ opening is a wedge shaped opening that extends radially to one side of the piston member section from a point which is between the centerline of the piston member section and the opposite side of the piston member section.

66-77. (Canceled)

78. (Previously presented) The needlefree access device of claim 93 wherein the housing includes threads for a luer lock fitting in the area surrounding the inlet channel.

79. (Previously presented) The needlefree access device of claim 93 wherein the housing comprises a base with threads for forming a luer lock.

80. (Previously presented) The needlefree access device of claim 93 wherein the housing comprises an internal sealing surface and the piston section seals against the sealing surface to prevent backflow through the access device when the piston section is in its closed position.

81. (Previously presented) The needlefree access device of claim 35 wherein the wiper seal closes the inlet against airborne bacteria when the piston section is in the closed position.

82. (Currently amended) A needlefree access device comprising:

a) a housing having an inlet, a base comprising an outlet, and a main body portion having a generally cylindrical inside surface between the inlet and the base;

b) a valve member actuatable between an open position and a closed position, the valve member comprising a piston section that includes a wiper seal adjacent the inlet when the valve member is closed, wherein in the closed position the valve member prevents flow between the inlet and the outlet, and wherein the piston section further comprises an opening in the top thereof.

and a flow channel beneath and connected to the opening and extending radially to the outside of the piston section; and

c) a central body within the main body portion of the housing, the central body having a helical shape on its outer surface, the central body fitting against the inside of the cylindrical surface when the valve member is in its open position;

d) the helical shape defining a helical flow path through the main body portion of the housing when the valve member is in an open position.

83. (Previously presented) The needlefree access device of claim 82 wherein the housing further comprises a tapered inlet channel having a luer taper for engaging with a syringe tip having a luer taper.

84. (Previously presented) A needlefree access device comprising:

a) a housing having an inlet, a base comprising an outlet, and a main body portion having a generally cylindrical inside surface between the inlet and the base;

b) a valve member actuatable between an open position and a closed position, wherein in the closed position the valve member prevents flow between the inlet and the outlet; and

c) a central body within the main body portion of the housing, the central body having a helical shape on its outer surface, the central body fitting against the inside of the cylindrical surface when the valve member is in its open position;

d) the helical shape defining a helical flow path through the main body portion of the housing when the valve member is in an open position

wherein the valve member is formed as part of a piston section of a combined piston section and biasing section.

85. (Previously presented) The needlefree access device of claim 84 wherein the central body forms part of the biasing section.

86. (Previously presented) The needlefree access device of claim 84 wherein the combined piston and biasing section comprises resilient material and is overmolded onto an outlet section comprising thermoplastic material, which in turn is attached to the base of the housing.

87. (Previously presented) The needlefree access device of claim 93 wherein the top portion of the piston section has a V-shaped opening therein.

88. (Canceled)

89. (Previously presented) The needlefree access device of claim 93 wherein the needlefree access device is in the form of a Y-shape access device, and comprises a secondary inlet.

90. (Previously presented) The needlefree access device of claim 89 wherein the secondary inlet is formed in the housing.

91. (Previously presented) The needlefree access device of claim 89 wherein the secondary inlet is formed in the outlet section.

92. (Previously presented) An IV bag having a port comprising a needlefree access device as recited in claim 82.

93. (Previously presented) A needlefree access device comprising:
- a) a housing having an inlet, an inlet channel and an outlet; and
 - b) a biasing and piston member having
 - i) a piston section moveable between a closed position in which the piston section is in the inlet channel and an open position in which the piston section is inside the housing below the inlet channel but allows fluid to flow through the inlet channel; and
 - ii) a biasing section connected to the piston section that normally biases the piston section into the inlet channel, the biasing section comprising a resilient body having a helical shape on at least part of its outer surface, the helical shape cooperating with the housing

surrounding the biasing section to provide a helical flow channel through the device.

94. (Previously presented) The needlefree access device of claim 93 wherein the helical shape comprises at least one complete helical revolution.

95. (Previously presented) The needlefree access device of claim 93 wherein the helical shape comprises less than one complete helical revolution.

96. (Previously presented) The needlefree access device of claim 93 wherein the housing is made of a housing member and an outlet member secured to the housing member and providing the outlet thereof.

97. (Previously presented) The needlefree access device of claim 96 wherein the outlet member comprises an outlet section interlocked to the biasing section and having an outlet fitting in fluid communication with the inside of the housing; wherein the piston section, biasing section and outlet section are connected together such that they can be handled as one piece when assembled with the housing to make the needlefree access device.

98-124. (Canceled)

125. (Previously presented) The needlefree access device of claim 82 wherein the wiper seal closes the inlet against airborne bacteria when the valve member is in the closed position.

126. (Currently amended) The needlefree access device of claim ~~53~~ 82 wherein the flow channel has a cross-sectional area larger than that of the opening in the top of the piston.

127. (Currently amended) ~~The A~~ needlefree access device of claim 82 comprising:

a) a housing having an inlet, a base comprising an outlet, and a main body portion having a generally cylindrical inside surface between the inlet and the base;

b) a valve member actuatable between an open position and a closed position, the valve member comprising a piston section that includes a wiper seal adjacent the inlet when the valve member is closed, wherein in the closed position the valve member prevents flow between the inlet and the outlet; and

c) a central body within the main body portion of the housing, the central body having a helical shape on its outer surface, the central body fitting against the inside of the cylindrical surface when the valve member is in its open position;

d) the helical shape defining a helical flow path through the main body portion of the housing when the valve member is in an open position;

wherein the piston section comprises a normally elliptical top portion with a V-shaped opening across a minor axis of the ellipse.

128. (Currently amended) The A needlefree access device of claim 82 comprising:

a) a housing having an inlet, a base comprising an outlet, and a main body portion having a generally cylindrical inside surface between the inlet and the base;

b) a valve member actuatable between an open position and a closed position, the valve member comprising a piston section that includes a wiper seal adjacent the inlet when the valve member is closed, wherein in the closed position the valve member prevents flow between the inlet and the outlet; and

c) a central body within the main body portion of the housing, the central body having a helical shape on its outer surface, the central body fitting against the inside of the cylindrical surface when the valve member is in its open position;

d) the helical shape defining a helical flow path through the main body portion of the housing when the valve member is in an open position;

wherein the piston section in its closed position is either flush with or extends out of the housing inlet.

129. (Currently amended) The A needlefree access device of claim 82 comprising:

a) a housing having an inlet, a base comprising an outlet, and a main body portion having a generally cylindrical inside surface between the inlet and the base;

b) a valve member actuatable between an open position and a closed position, the valve member comprising a piston section that includes a wiper seal adjacent the inlet when the valve member is closed, wherein in the closed position the valve member prevents flow between the inlet and the outlet; and

c) a central body within the main body portion of the housing, the central body having a helical shape on its outer surface, the central body fitting against the inside of the cylindrical surface when the valve member is in its open position;

d) the helical shape defining a helical flow path through the main body portion of the housing when the valve member is in an open position;

wherein the piston section comprises a normally elliptical top portion with a wedge shaped opening therein.

130. (Previously presented) The needlefree access device of claim 129 wherein the housing inlet is round and the piston section is moveable in the housing inlet and is deformable such that when the piston section is in its closed position, the top portion is forced into a round shape and the wedge shaped opening is closed.